intellihot™

Operation Manual

Model: i200X
i250X

For units shipped after July 13, 2015

Intellihot Direct Vent Combination Water heater. This product complies with ANSI Z21.10.3 (2011) / CSA 4.3 Gas Water Heater. For use as potable water heating and space heating.

Intertek

Certified to NSF/ANSI 372

Ultra Low NOx certified 2012 SCAQMD

⚠ WARNING

If the information in these instructions is not followed exactly, a fire or explosion could result causing property damage, personal injury, or death.

— Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

— Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

⚠ AVERTISSEMENT

Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

— Ne pas entreposer ni utiliser d'essence ou ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ

- Ne pas tenter d'allumer d'appareil.
- Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.

— L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

To avoid product damage, personal injury, or even possible death, carefully read, understand, and follow all the instructions in the Installation and Operation manuals before installing this product. Improper installation, adjustment, alteration, or maintenance can cause injury, loss of life, and/or property damage. This water heater should be installed and serviced by a qualified technician. The lack of proper service can result in a dangerous condition.

This manual contains safety information, installation instructions, and maintenance procedures. It must be left with the homeowner or placed near the water heater in a noncombustible place. The customer should retain this manual for future reference.

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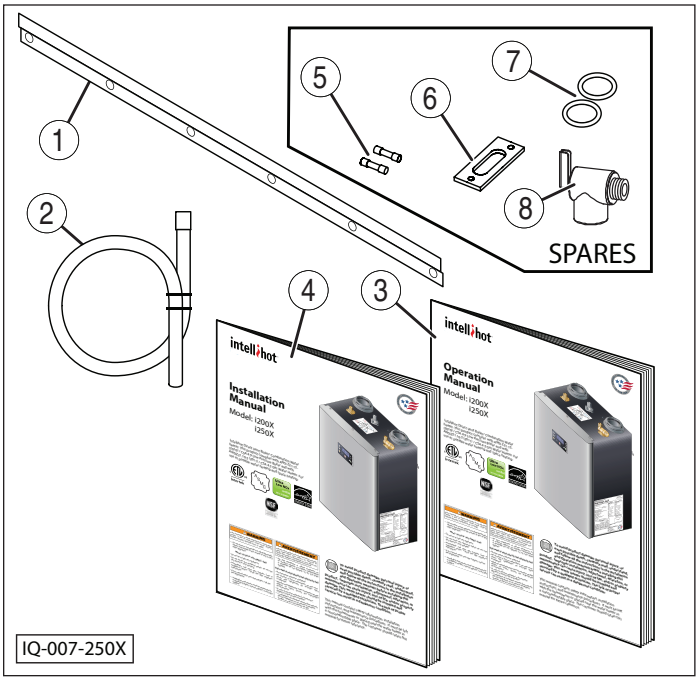
1. General Information

1.1 Items Shipped With Water Heater

The following items are shipped with the water heater; upper mounting bracket (1), condensate drain (2), Operation manual (3), and Installation manual (4).

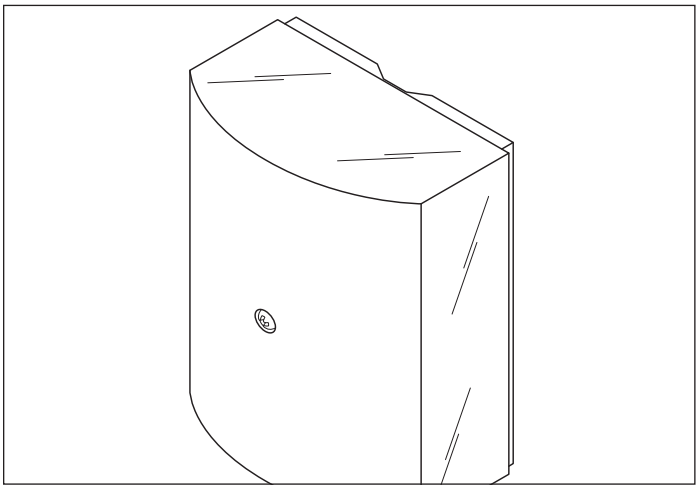
Note: Items 6 through 9 are spare parts shipped with the unit. Two 10A bus fuses (5), electrode seal (6), O-rings #015 (7), and 30psi relief valve (8).



⚠ WARNING

Condensate drain line (2) is shipped from the factory with a loop held together with plastic ties. Do not remove the ties and/or straighten the loop. This loop forms an air block (trap) which prevents carbon monoxide from exiting the water heater through the drain line. Improper installation of the drain line can result in excessive levels of carbon monoxide, which can lead to severe personal injury or death.

1.1.1 Optional Items



An optional outdoor sensor can be purchased separately connected to this unit (part number: IGT-SPR0074).

1.2 Contact Information

Call us first if you have any questions about this product. We can help you with questions about installation or operation, or if there are damaged or missing parts when you unpack this unit from the shipping box.

Stamp or write your dealer contact information here for future reference.

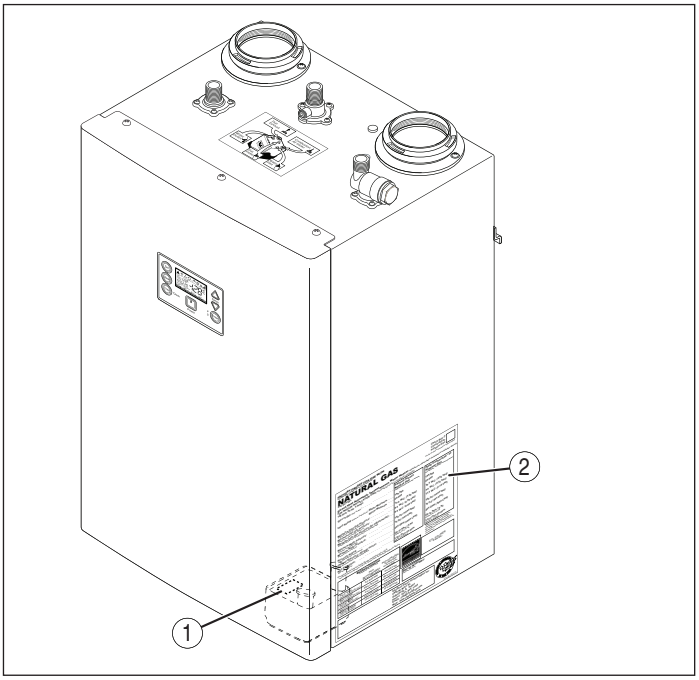
Due to our policy of continuous product improvement and technology, the design and/or technical specifications are subject to change without notice.

Serial Number: _____

Date of Installation: ___ / ___ / _____

1.3 Serial Number Plate Locations

Each unit's heat exchanger module has its own ASME certification plate (1). Rating plate (2) contains serial number for the unit. Please provide this serial number when calling for service or warranty.



2. Safety

2.1 Safety Signal Words

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates that equipment or property damage can result if instructions are not followed.

SAFETY INSTRUCTIONS

Safety instructions (or equivalent) signs indicate specific safety-related instructions or procedures.

Note: Contains additional information important to a procedure.

2.2 Installation Warnings

⚠ WARNING

DO NOT use this water heater for any purpose other than water heating.

Read, understand, and follow the Installation and Operation manuals, including all warnings and precautions, before operating this water heater. If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury, or loss of life.

Follow all local codes and the most recent edition of the National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA or the Natural Gas and Propane Installation Code in Canada (CSA B149.1).

This water heater must be installed by a licensed plumber, gas fitter, and/or professional service technician. Installation by unqualified person(s) voids the warranty.

⚠ DANGER

A. This water heater does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner manually.

B. BEFORE OPERATING, smell all around the water heater area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS:
- **Do not try to light any appliance.**
- **Do not touch any electric switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire or police department.**

C. Use only your hand to turn the manual gas shut-off valve. Never use tools. If manual gas shut-off valve will not turn by hand, don't try to repair it. Call a qualified service technician. Force or attempted repair may result in a fire or explosion.

⚠ WARNING

DO NOT use or store flammable liquids around the water heater, including gasoline, oils, spray paints, etc.

DO NOT operate this water heater unless it is properly vented to the outside (the exhaust vent piping must be connected from the unit directly to the outside). Improper venting can cause a build-up of carbon monoxide, which can result in brain damage or death. Exhaust gases must be completely expelled out of the building.

This water heater is factory preset for NATURAL GAS but may be field converted for use with propane. For propane conversion, refer to the Propane (LPG) Conversion section of this manual. Connecting the water heater to any other gas supply can result in property damage, serious injury, or even death.

This water heater is suitable for use in potable water heating applications. The cold and hot water fittings on the top of the water heater MUST NOT be connected to any heating system.

The water heater temperature is factory set to 120°F (49°C). Hot water temperatures above 125°F can cause severe burns instantly or death from scalds. If the proposed water heater outlet temperature is to be set above 125°F, installation of a thermostatically controlled (or temperature limiting) mixing valve is recommended for all hot water going to faucets to avoid the risk of scalding. Examples include commercial applications where 140°F (60°C) is often needed or if the space heating temperature required is higher than the domestic hot water. Always check the temperature of the hot water before bathing, showering, washing, etc.

Protect against snow and debris accumulation around the vent terminations. Regularly inspect the exhaust vent pipe and the air intake pipe to ensure they remain clear from obstructions at all times.

⚠ CAUTION

Make sure you know the location of the gas shut-off valve and how to operate it. Immediately close the gas shut-off valve if the water heater is subjected to fire, overheating, flood, physical damage, or any other damaging condition that might affect the operation of the unit. Have the water heater checked by a qualified technician before resuming operation.

If the water quality is known to have high acidity and/or high hardness, water treatment is recommended. Consult the local water authority.

SAFETY INSTRUCTIONS

DO NOT use this appliance if any part has been under water.

DO NOT reverse the cold water and gas connections as this will damage the gas valve.

DO NOT overtighten fittings as damage may occur, causing internal leakage.

The appliance should be located in an area where leakage within the unit or at its connections will not result in damage to the surrounding area. The manufacturer will not be responsible for any damage resulting from leaking if adequate drainage is not provided.

⚠ WARNING

All piping and components connected to the water heater for the space heating application shall be suitable for use with potable water.

Do not use toxic chemicals, such as used for boiler treatment, in potable water, in potable water heating systems.

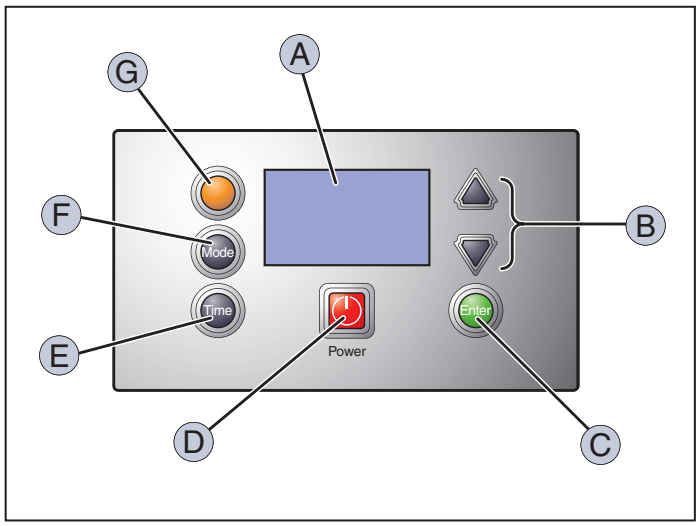
Suitable for water (potable) heating and space heating. the water heater MUST NOT be connected to any heating system or components previously used with a non-potable water heating appliance.

If the system requires water for space heating at temperatures higher than required for other uses, a mixing valve must be installed to temper the water for those other uses in order to reduce scald and hazard potential.

Water heaters used for combination water/space heating CANNOT be used in space heating applications only.

3. Operation

3.1 Control Panel



A) **LCD screen**
The LCD display screen shows all information about the operating functions of the water heater.

B) **Arrow** keys
Press the UP or DOWN arrows to adjust the value of the selected feature, such as time or water temperature.

C) **Enter** button
To return to the Main or Home screen.

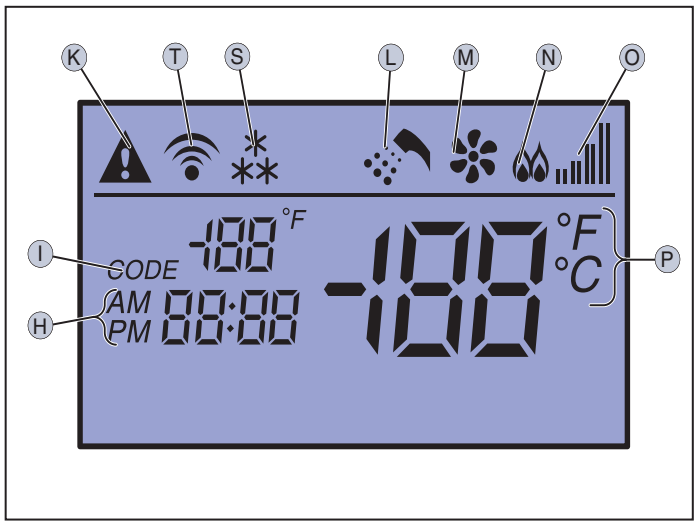
D) **Power** button
When the water heater is initially connected to an electrical power supply, the unit will automatically turn ON and the display panel should light up. To turn the unit OFF, press and hold the Power button and the water heater will go through a shutdown process. The unit can then be turned ON again, once the blower finishes its purge cycle (10 seconds) by pressing the Power button.

E) **Time** button
Press this button to set the hours and minutes on the clock.

F) **Mode** button
Press this button to access various Modes of Operation.

G) **Orange** button
Used to view real time flow and temperature readings.

3.2 Display Icons



H) Displays the current time in AM or PM.

I) CODE Display
Displays the CODE icon and the most recent digital error code.

K) Error Icon
Indicates an error has been detected and a trouble code may be shown next to the CODE icon.

L) Indicates water flow (open faucet).

M) Indicates blower is ON.

N) Indicates burner is ON.

O) Gas Consumption Icon
Indicates the level of energy usage. There are four "bar" indicators and each represent 25% of gas usage.

P) Indicates outlet water temperature.

S) Freeze Indicator Icon
This icon indicates that the unit has detected potential freezing conditions and will operate to keep the internal component water temperature above the freezing limits.

T) Thermostat Icon
Indicates the unit has received a signal from the thermostat calling for heat.

3.3 Turning Water Heater ON and OFF

1. When plugging in, the unit will show the four digit software version. To turn the water heater ON press the Power button. The screen will show INIT until initialized, and the home screen will automatically display when the unit is ready to use.
2. To turn the water heater OFF, press and hold the Power button for three seconds and the display screen will show OFF.

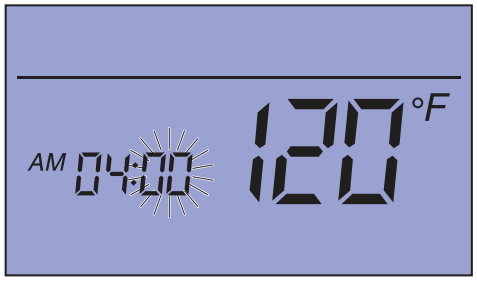
3.4 Resetting (Clear) Error Codes

1. To reset the water heater and clear all error codes, press and release Power button.

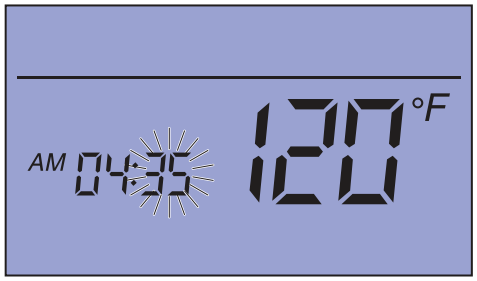
3.5 Setting the Time

1. Press and release the Time button.

   The minute section of the time display will flash.

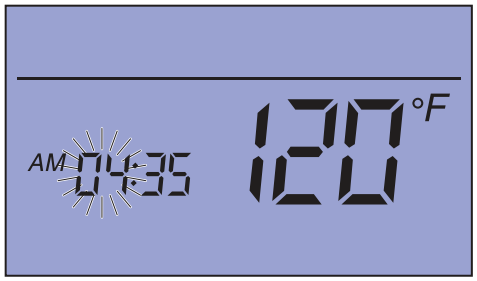


2. Press the Up/Down arrows to set the correct minute.

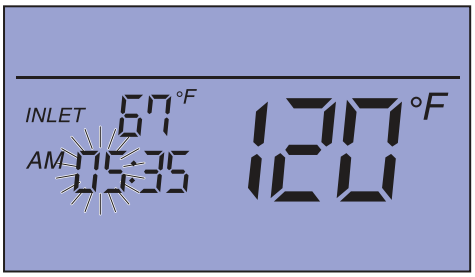


3. Press and release the Time button again.

   The hour section of the time display will flash.



4. Press the Up/Down arrows to set the correct hour. When setting the hour, make sure you have correctly advanced the time to either the AM or PM hour setting.



5. Press and release the Time button again.

   The colon (:) between the hours and minutes should now be flashing, indicating the time has been properly set.

3.6 Setting the Domestic Water Temperature

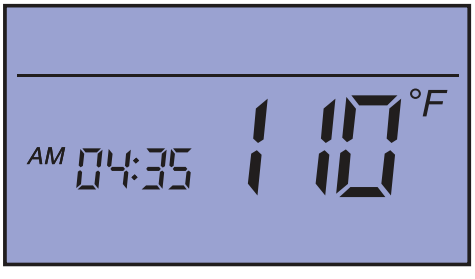
Note: The outlet water temperature is factory preset to 120°F.

⚠ WARNING

Hot water temperature over 125°F (52°C) can cause severe burns instantly or death from scalding. Children, the disabled, and the elderly are at the highest risk of being scalded. Do not leave children or the infirm unsupervised. Check temperature of hot water before taking a shower or bath. To control water temperature to a particular faucet, temperature limiting valves can be installed by your service professional.

All water faucets must be closed before changing the temperature setting. The unit must not be operating (burner icon not on).

Press the Up/Down arrows to set the desired temperature range from 100 to 140°F in one degree increments.



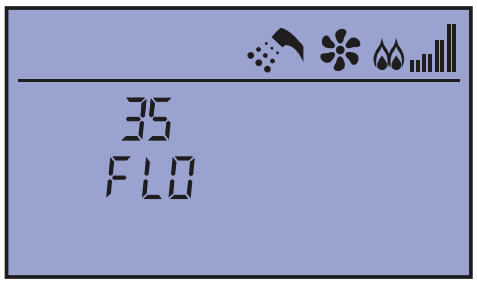
3.7 Setting Space Heating Temperature

Press and hold the Orange button. On the right-hand side of the display the current temperature setting of the supply water is shown. To change the supply water temperature push the Up/Down arrow key, while continuing to hold the orange button. The setting range for the supply water is from 100°F to 170°F. However, the minimum space heating set temperature is 20°F below the domestic hot water set temperature.

3.8 Real Time Parameter Display

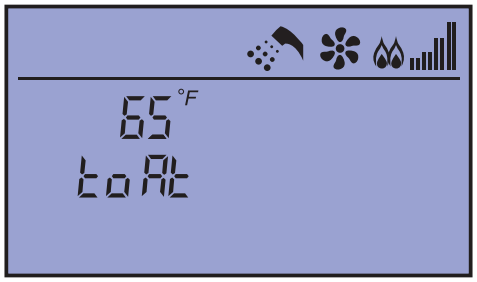
Press and release the Orange button. The left-hand side of the display scrolls through the following parameters in succession: After scrolling through the parameters three times, the display returns to the main screen.

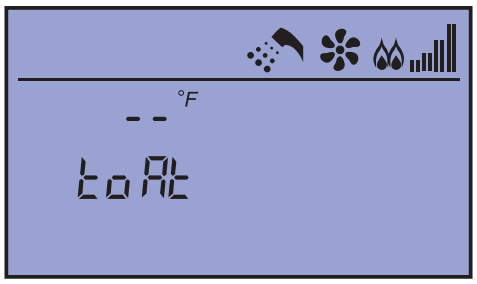
Flow Rate
The flow rate is indicated with FlO and actual flow rate (3.5 GPM).



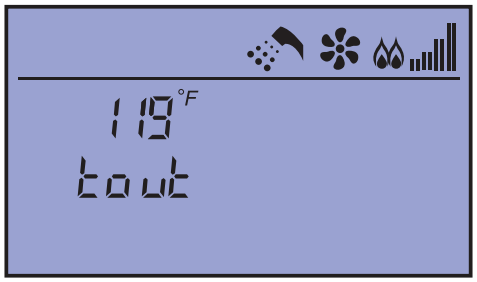
Actual Outside Air Temperature (if connected)
toAt and the actual outside air temperature, such as 65°F.

If -- is shown, this parameter is unavailable or sensor is not connected..

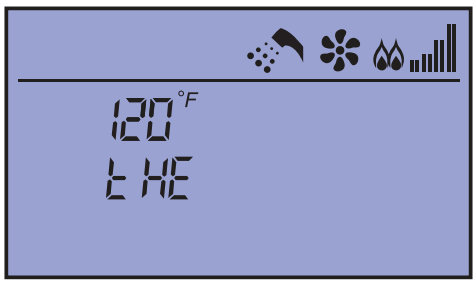




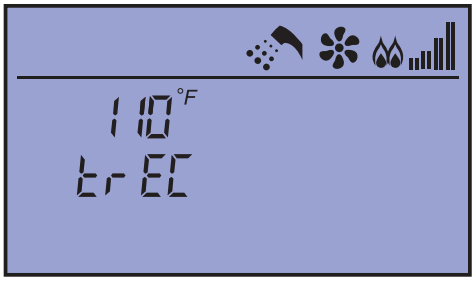
Domestic Outlet Water Temperature
tout and the actual domestic hot water (DHW) outlet temperature, such as 120°F



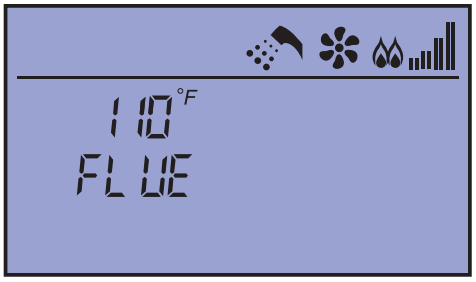
Heat Exchanger Temperature
tHE and the actual temperature of the heat exchanger, such as 120°F.



Recirculation Temperature
trEC and the actual temperature of recirculation, such as 110°F.

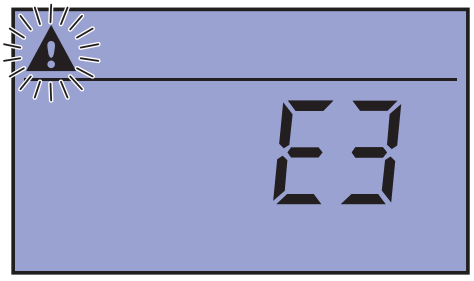


Flue Temperature
FLUE and the actual temperature of flue, such as 110°F.



3.9 Error Screen

If an error occurs, the display will indicate an error code; E1, E3, E7, etc. The flashing triangle will also appear in the upper left corner of the display to indicate a potential problem with the unit.



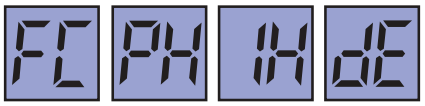
Refer to the Troubleshooting section for additional information on the resolution of error codes.

4. Programming

4.1 Modes of Operation

The Modes of Operation screens provide set up screens and additional information on the water heater. There are five Mode of Operation screens which are used by the technician during installation or maintenance of the water heater.

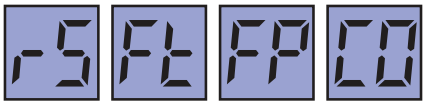
4.1.1 Standard Modes



1. Press and release the Mode button until the desired screen shows on the display.
   FC - Flow Control
   PH - Performance History
   IH - Setting Instant Hot Water Times
   dE - Diagnostic Error

2. Follow the instructions in the specific section to enter the desired settings.

4.1.2 Advanced Modes



1. Press and hold the Mode button for five seconds until the rS screen appears. Now press and release the Mode button multiple times until the desired screen shows on the display.
   rS - Burner Rate Ramp Setting
   Ft - Fuel Type
   FP - Flue Pipe Type
   CO - Adjust CO_2 Level

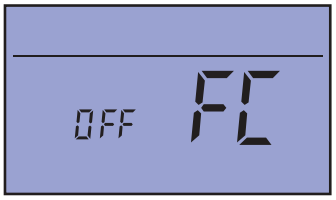
2. Follow the instructions in the specific section to enter the desired settings.

4.2 Viewing and Setting Modes of Operation

4.2.1 Flow Control Selection

Press the Mode button multiple times until the FC screen appears on the display.

The current setting will be shown on the display.



The water control valve is set to ON for temperature priority and OFF for maximum flow.

Press the Up/Down arrows to select either ON or OFF.

Press and hold the Enter button for three seconds to save the settings and return to the home screen.

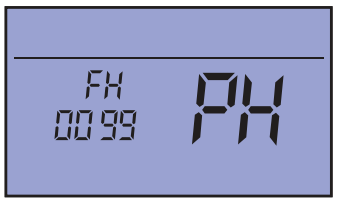
Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

4.2.2 Performance History

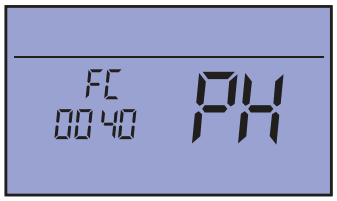
The Performance History mode allows the technician to view ignition cycles, number of ON times, and cumulative water flow. The displayed results are for all the water heater modules combined within the unit.

Press the Mode button multiple times until the PH screen appears.

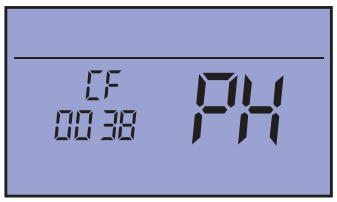
The Flow-On Hours FH, Firing Counts FC, and Cumulative Flow CF, will now begin to display for 1.5 seconds each. The display will continue to cycle for 30 seconds and then return to the home screen. Some examples are shown below.



Diagnostic Code FH (Flow-on hours) shows one hour of flame. (To obtain the total hours, multiply the number by 10).



Diagnostic Code FC (Firing Count) shows a flame count of 40,000. (To obt ain the total number, multiply the number by 1,000).



Diagnostic Code CF (Cumulative Flow) shows 38,000 gallons of water. (To obtain the usage in gallons, multiply the number by 1,000).

Press and hold the Enter button for three seconds to return to the home screen.

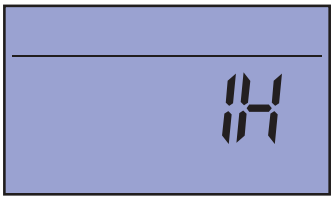
Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

4.2.3 Setting Instant Hot Water Times

This mode is used to set the times when the unit will supply instant hot water.

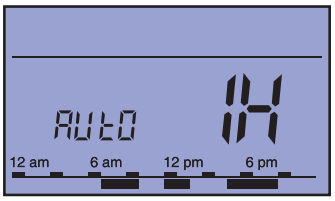
This mode can only be accessed when Flame icon is NOT showing on the display.

Push Mode button multiple times until IH appears on the display.



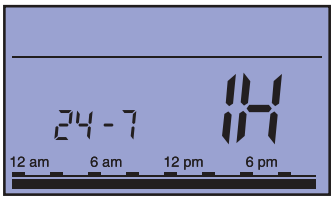
The current setting will show in the time area of the display as Auto, 24-7, Pat1, Pat2, Pat3, Pat4, or nonE.

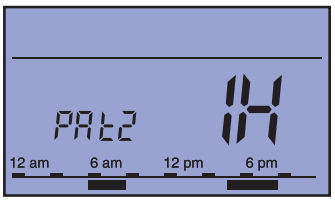
The default setting is AUtO and the learned times will be displayed.

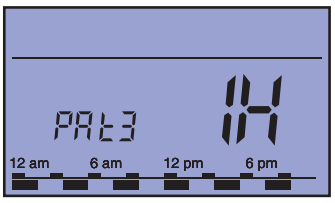


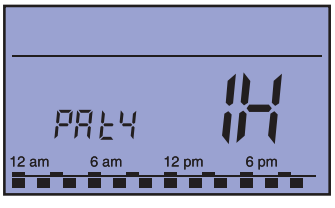
Press the Up/Down arrows to toggle between the available six patterns (Auto, 24-7, Pat1, Pat2, Pat3, Pat4, or nonE). Once the desired pattern is selected, press and hold the Enter button for three seconds to save the settings and return to the home screen.

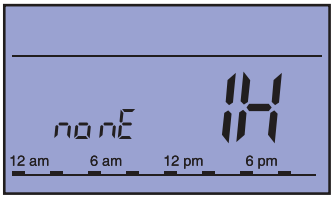
If the Enter button is not pressed within the 30 second time limit, the setting will not be saved.











4.2.4 Diagnostic Code and Error Log Selection

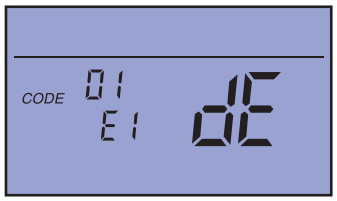
This screen provides the technician with Diagnostic Codes and Errors recorded as the water heater operates. These codes are used in conjunction with the Performance History Codes.

Error Code	Description of Error Code
E1	Blower Speed Fault
E3	Blocked Flue Fault
E7	Ignition Failure
E9	Temperature Sensor Shorted
EA	Temperature Sensor Open Circuit
EC	Flue Temperature Exceeded Set Limit
Ed	Heat Exchanger Outlet Temperature Exceeded Set Limit
Flashing Warning Icon	Error Code and Unit Locked Out
Flashing Recirculation Icon	Pump Is Not Operating

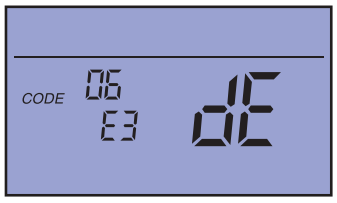
* If Eb is displayed, please call the factory for service instructions.

Press and release the Mode button multiple times until the dE screen appears.

The 01:E1 screen is the most recent code, while the 10:E3 is the last viewable screen. Refer the examples below for further clarification.



Example of latest diagnostic code Fan Speed Error Code E1.



Example of the last viewable code Blocked Flue Fault Code E3.

Press and hold the Enter button for three seconds to return to the home screen.

Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

4.2.5 Blower Ramp Selection

When exhaust harmonics are observed, i.e. resonance at low fire, adjust the water heater using the blower ramp setting (default is rat3). Increase the rate number until the resonance is no longer observed.

The Blower Ramp Selection has five different settings (rat1 - rat5):

Press and hold the Mode button for five seconds to access the rS screen on the display. The current setting will be displayed.

Press the Up/Down arrows to select the Blower Ramp Selection from five different settings (rat1 - rat5). Select a ramp rate at which the harmonics disappears during operation.

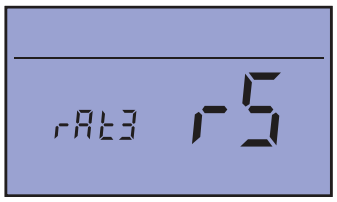
Press and hold the Enter button for three seconds to save the settings and return to the home screen.

Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

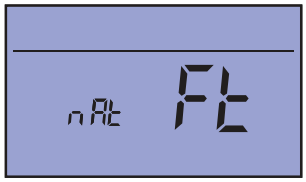
4.2.6 Fuel Type Verification

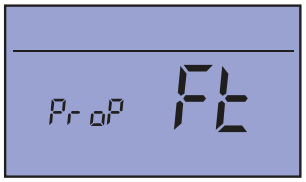
The Fuel Type mode screen shows the selected fuel type; natural gas (factory preset) or Propane. Operation with natural gas is factory preset. Refer to the Propane (LPG) Conversion section in this manual for additional set up information.

Press and hold the Mode button for five seconds to access the rS screen on the display.



Press and release the Mode button until the Ft screen appears on the display. The current Fuel Type setting will appear (nAt or PrOP) to indicate the position of DIP switch 3 on the circuit boards. Fuel type cannot be changed from the screen.





To change fuel type from factory set natural gas to propane, follow the Propane Conversion procedure in this manual.

Press and hold the Enter button for three seconds to return to the home screen.

Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

4.2.7 Flue Pipe Selection (PVC or CPVC)

Changing this setting can only be done when the Flame ON icon is not displayed.

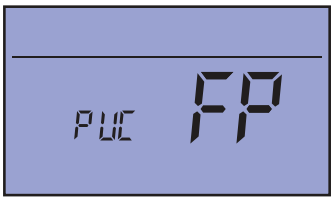
⚠ WARNING

When the unit is set for CPVC or polypropylene pipe, flue temperatures can reach 185°F. PVC pipe will lose integrity at temperatures above 149°F. Make sure FP setting and the type of material being used for the flue are compatible.

Press and hold the Mode button until the rS screen appears.

Press the Mode button multiple times until the FP screen appears. The current setting will be displayed.

The default setting for this mode is PVC.



Press the Up/Down arrows to select the desired setting of either PUC or CPUC.

Note: The flue temperature for PVC material must not exceed 149°F. The flue temperature for CPVC or Polypropylene material must not exceed 185°F.

Press the Enter button to save the changes and return to the main screen.

Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

4.2.8 Adjusting CO_2 Levels Selection

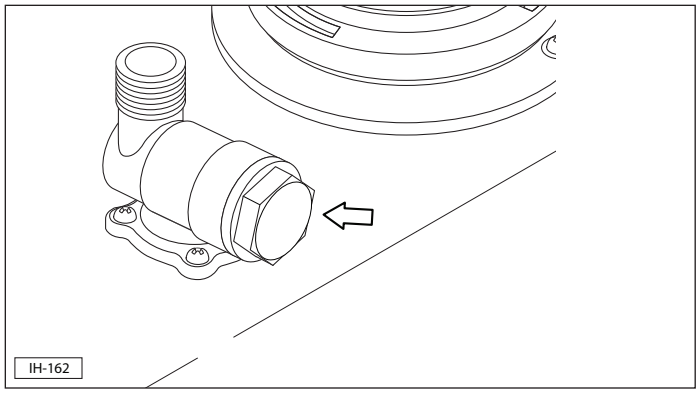
Refer to the Adjusting the CO_2 Level section in this manual.

5. Maintenance

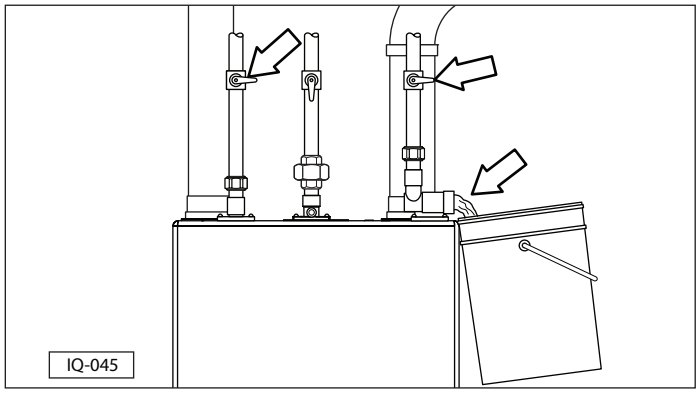
5.1 Cleaning the Inlet Water Strainer

All the water heaters are equipped with a sediment strainer on the inlet water connection.

Initially, this strainer should be inspected and cleaned every three months to establish a cleaning schedule.

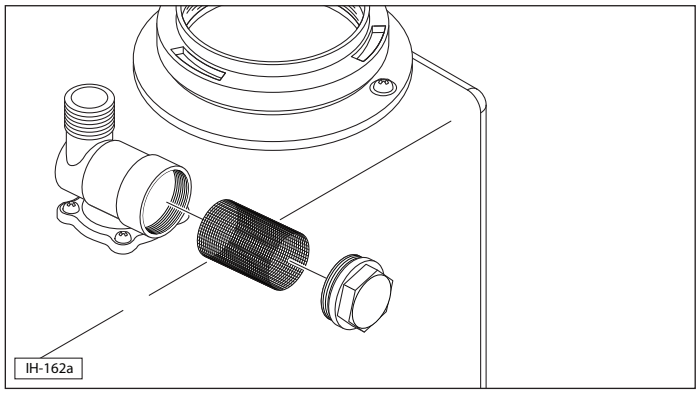


1. Turn off power and gas.
2. Position a container under the strainer on the water inlet piping.
3. Close the water inlet and outlet valve (arrow) and remove the cover plug. Allow the water to drain from the pipe.



Note: If a water shut-off valve was not installed, shut off the main water supply valve at the water heater.

4. Remove the strainer screen, clean it, and reinstall it in the housing.



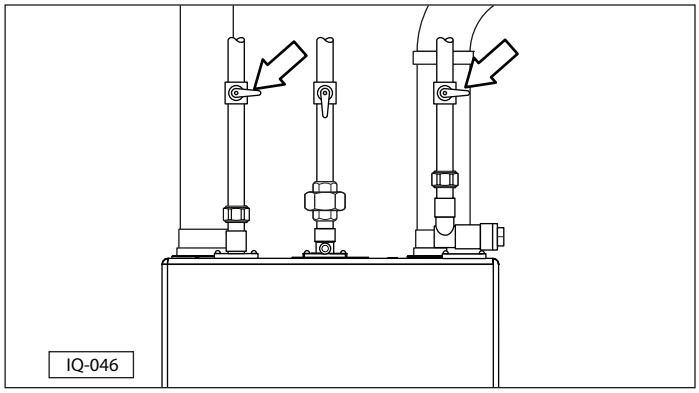
5. Replace the strainer cover plug.

5.2 Draining the Water Heater

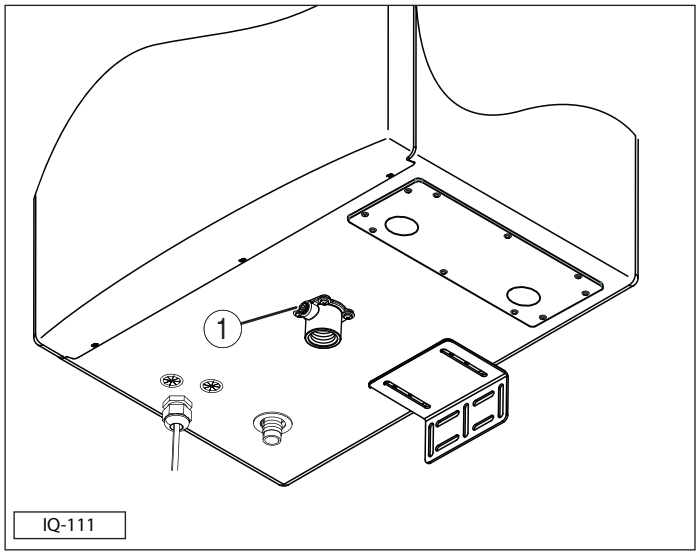
⚠ CAUTION

Hot water can cause burns to the skin. The water temperature is factory set to 120°F (49°C). To avoid burns, make sure the water heater is OFF and the power supply is disconnected. The water heater will remain hot for some time. Wait until the unit has completely cooled before draining the water heater or performing any other maintenance.

1. Press the Power button to turn OFF the water heater. Disconnect the power.
2. Close the water supply inlet and outlet valves. Turn OFF the gas supply.



3. Position a bucket or other container against the drain port.
4. Use an Allen wrench and remove drain plug (1).



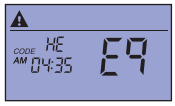
5. When all the water has drained from the water heater, replace the drain plug.

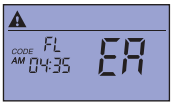
5.3 Filling the Water Heater

1. Open the water outlet supply valve. Slowly open the water inlet supply valve.
2. Open the hot water faucet that is located farthest away from the water heater. Once a steady stream of water flows and all the air is purged from the system, close the hot water faucet.
3. Connect the unit to the power supply.
4. Open a hot water faucet. The water heater should operate normally.

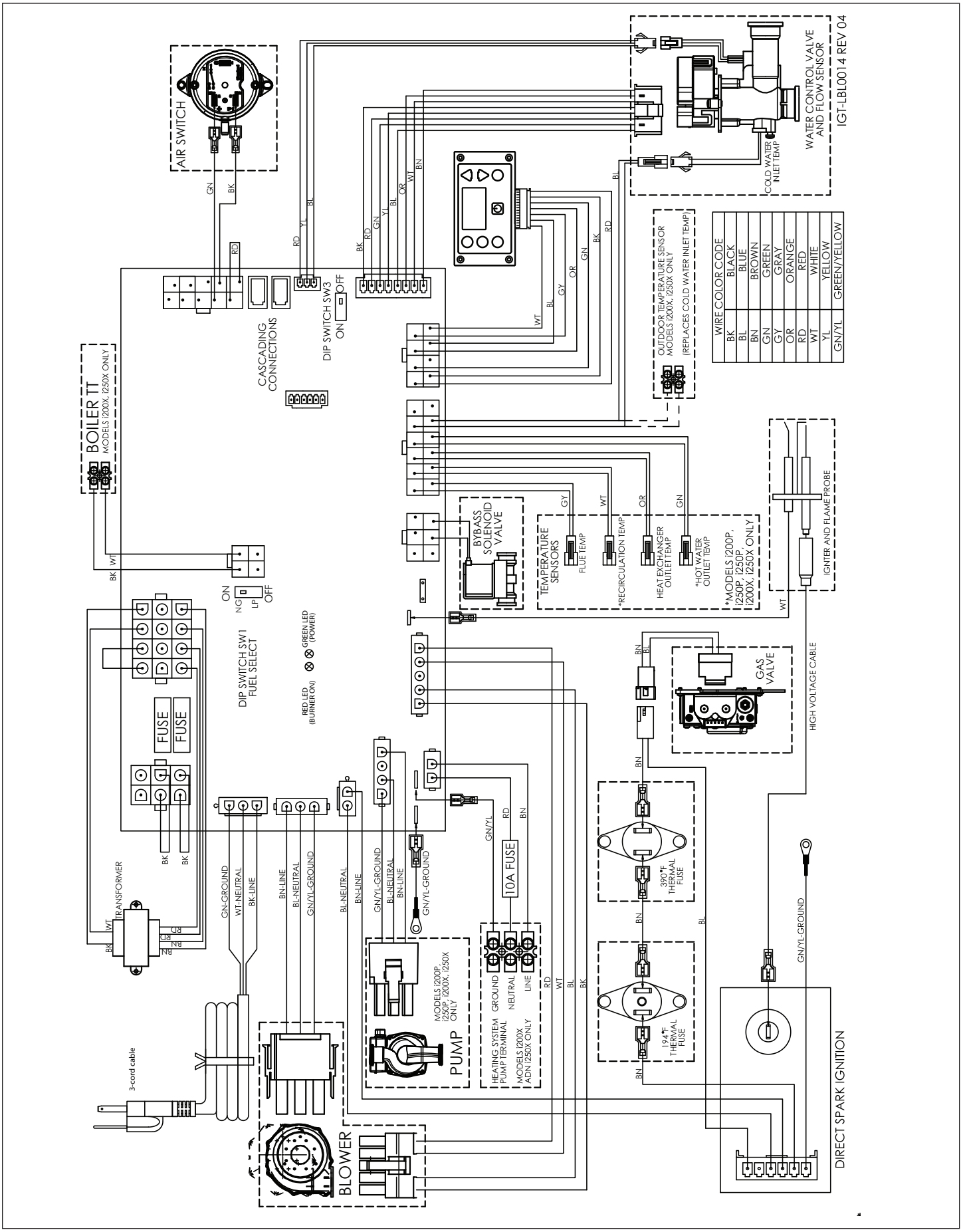
6. Troubleshooting

6.1 Error Code Chart

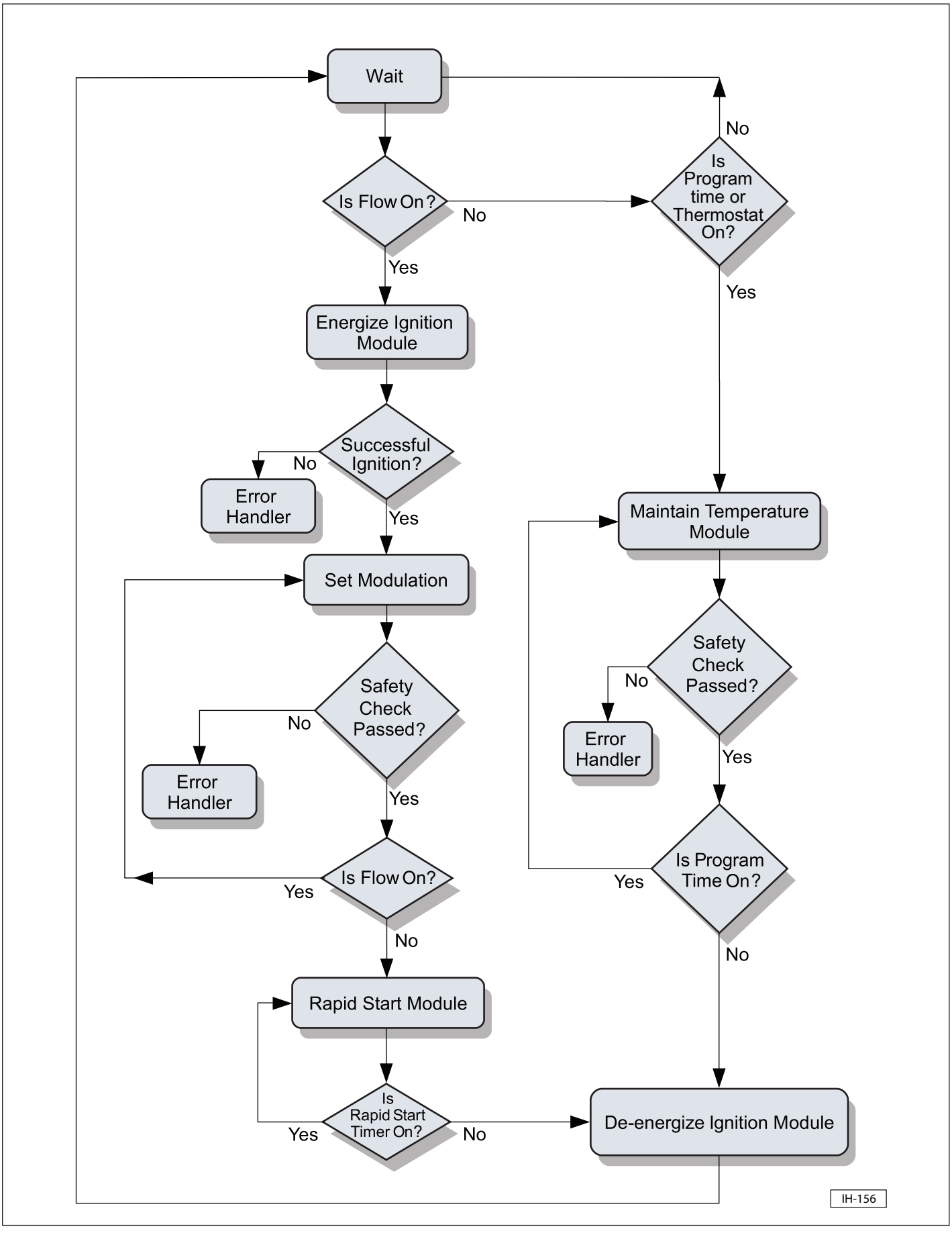
	Blower Speed Fault	• Blower noisy / impeller jammed. • Disconnected signal wire. • Wiring faulty.	• Inspect blower / impeller. Clean and remove any obstructions. • Check PWN signal. Check for loose wires / pins, and repair. • Check PWN signal. Check for loose wires / pins, and repair. If the problem persists, turn control panel OFF, shut gas valve, unplug unit, and contact an authorized service technician.
	Blocked Flue Fault	• Exhaust blocked (bird, etc). • Backed up condensate. • Wiring loose (switch open).	• Check exhaust termination. Check exhaust connection at water heater. Install screens. • Check slope of drain. Check for double loops, air locks, or debris in loop. • Check wiring.
	Ignition Failure	• Water over-heat switch tripped. • Faulty DSI, faulty igniter wire, faulty ignition connection, faulty PCB, bad igniter. • Low gas pressure.	• Check pump, check cross over solenoid. Electrical noise (dsi). • Replace part. • Adjust gas pressure at regulator, check / upsize gas line, check for gas line blockage. • If the problem persists, turn control panel OFF, shut gas valve, unplug unit, and contact an authorized service technician.
	Temperature Sensor Shorted  	• Faulty sensor wiring • Faulty sensor • HE - heat exchanger water outlet temperature sensor. • FL - Flue temperature sensor. • OA - outdoor air temperature sensor. • Faulty controller • rE - Recirculation temperature sensor. • Ou - Domestic Hot water outlet temperature sensor.	• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. • Measure resistance of sensor at connector (18 Kohm at 50°F, 10 Kohm at 77°F, 3 Kohm at 140°F) • Replace controller

EA	Temperature Sensor Open Circuit  	• Unplugged connectors • Faulty sensor wiring • Faulty sensor • HE - heat exchanger water outlet temperature sensor. • FL - Flue temperature sensor. • Faulty Controller • rE - Recirculation temperature sensor. • Ou - Domestic Hot water outlet temperature sensor.	• Check connectors and ensure they are securely connected • Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors • Measure resistance of sensor at connector (18 Kohm at 50°F, 10 Kohm at 77°F, 3 Kohm at 140°F) • Replace controller
EC	Flue Temperature Exceeded Set Limit	• Incorrect vent set up • High inlet temperature • Faulty sensor wiring • Faulty sensor • Faulty Controller	• If vent pipe material is CPVC or Polypropylene, ensure that CPVC is selected in the FP (Flue Pipe) mode. • Ensure inlet temperature is lower than 150°F if vent pipe material is PVC or lower than 190°F if vent pipe material is CPVC or Polypropylene. • Check for nicked or broken sensor wiring & connectors. Also check for corroded or wet connectors • Measure resistance of sensor at connector (18 Kohm at 50°F, 10 Kohm at 77°F, 3 Kohm at 140°F) • Replace controller
Ed	Heat Exchanger Outlet Temperature Exceeded Set Limit	• Flow rate changes excessive • Faulty sensor wiring • Faulty sensor • Faulty Controller	• Ensure the water flow rate does not change faster than 2 GPM every 5 seconds • Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors • Measure resistance of sensor at connector (18 Kohm at 50°F, 10 Kohm at 77°F, 3 Kohm at 140°F) • Replace controller
⚠	Flashing Icon	• Indicates an error code and unit locked out	• Refer to the indicated error code (E1, E2, etc) for resolution
↻	Recirculation Icon Flashing	• Pump inoperable • Pump faulty & excessively hot • Faulty Controller • Plugged up solenoid valve (P models) • Solenoid valve faulty (P models) • Jammed check valve	• Check pump wiring harness for loose connectors • Replace pump • Replace controller • Clean lines and replace solenoid • Replace solenoid valve • Remove check valve access and ensure gate is free to move
Init	Init stays on display	• Faulty time valve/wiring	• Replace time valve/wiring
	Heat Exchanger never reaches set temperature	• Solenoid valve faulty	• Check solenoid (SMC) valve and replace if necessary

6.2 Wiring Diagram Chart

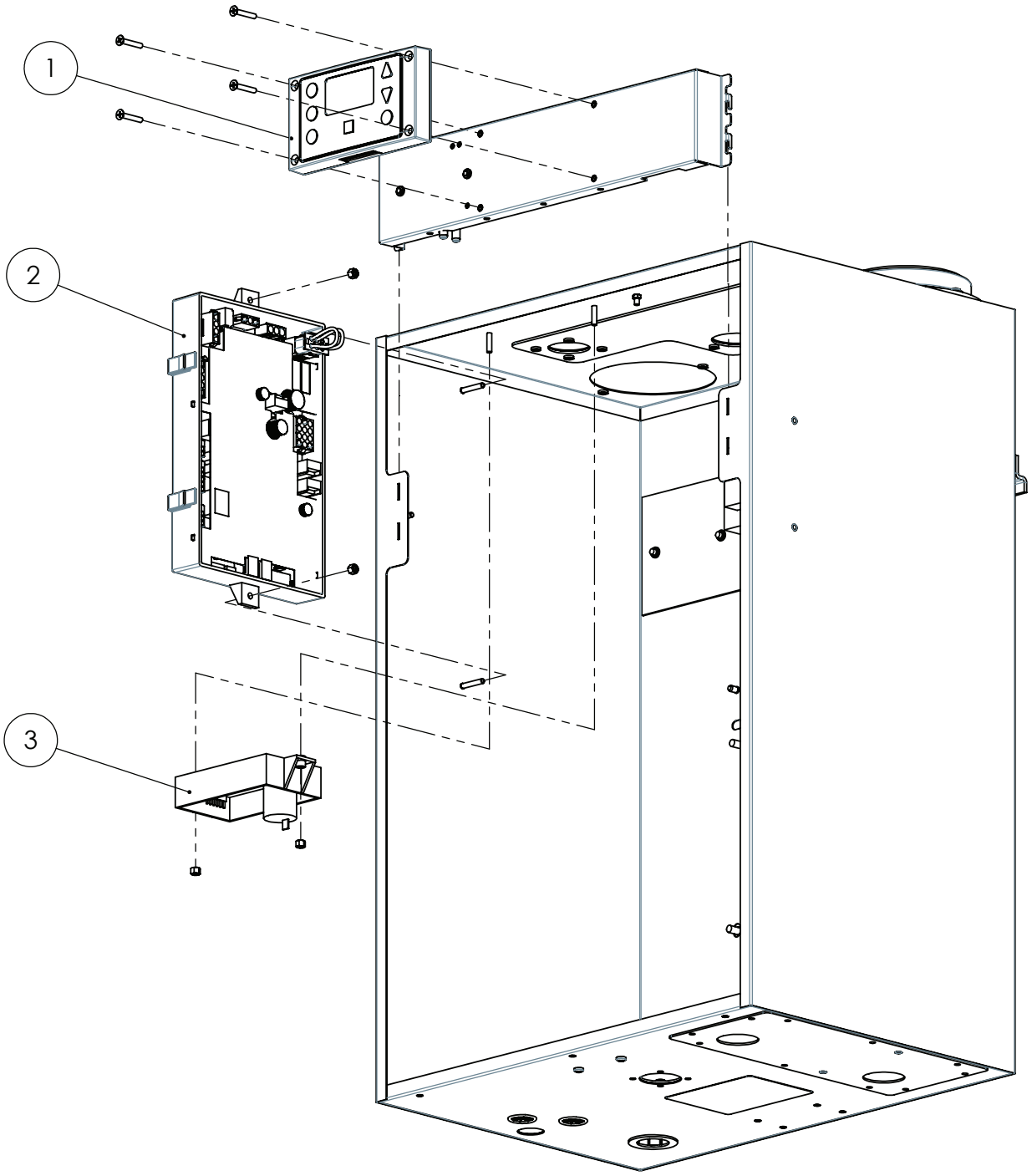


6.3 Operational Diagram



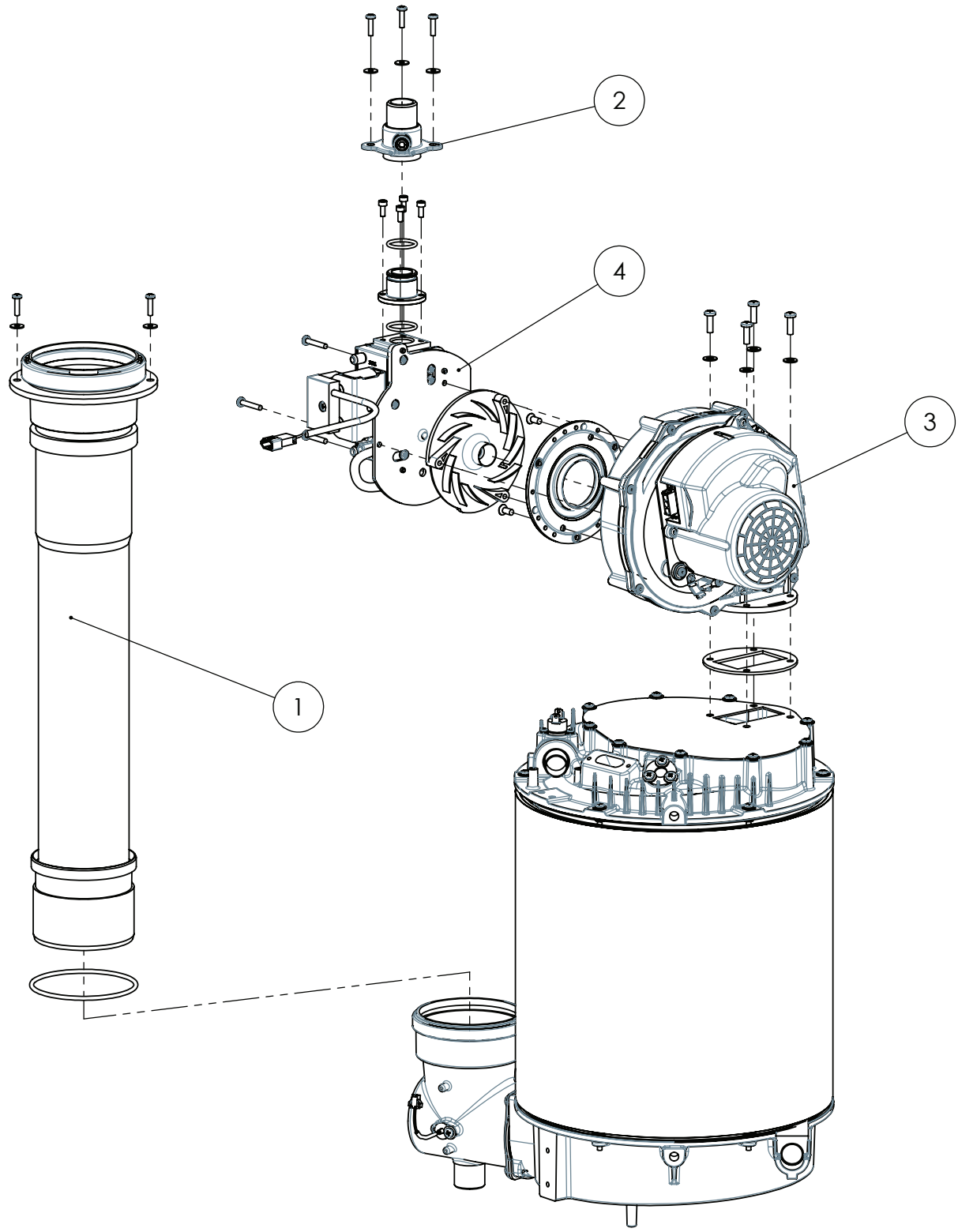
7. Serviceable Parts

7.1 Electrical Components



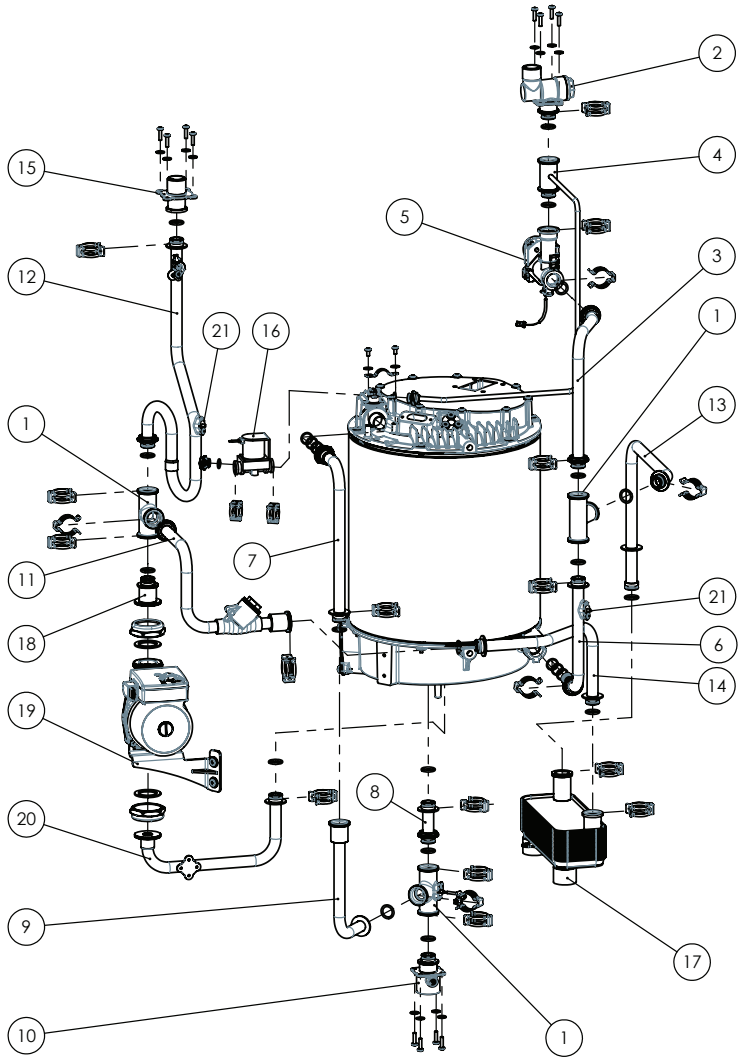
ITEM NO.	PART NUMBER	DESCRIPTION
1	IGT-SPR0004	DISPLAY
2	IGT-SPR0002	CONTROLLER
3	IGT-SPR0005	IGNITER MODULE

7.2 Blower, Gas Valve, and Exhaust



ITEM NO.	PART NUMBER	DESCRIPTION
1	IGT-SPR0017	i200X/i250X FLUE PIPE ASSEMBLY (PP)
2	IGT-SPR0016	i200X/i250X GAS INLET ASSEMBLY
3	IGT-SPR0008	BLOWER KIT
4	IGT-SPR0011	GAS VALVE KIT

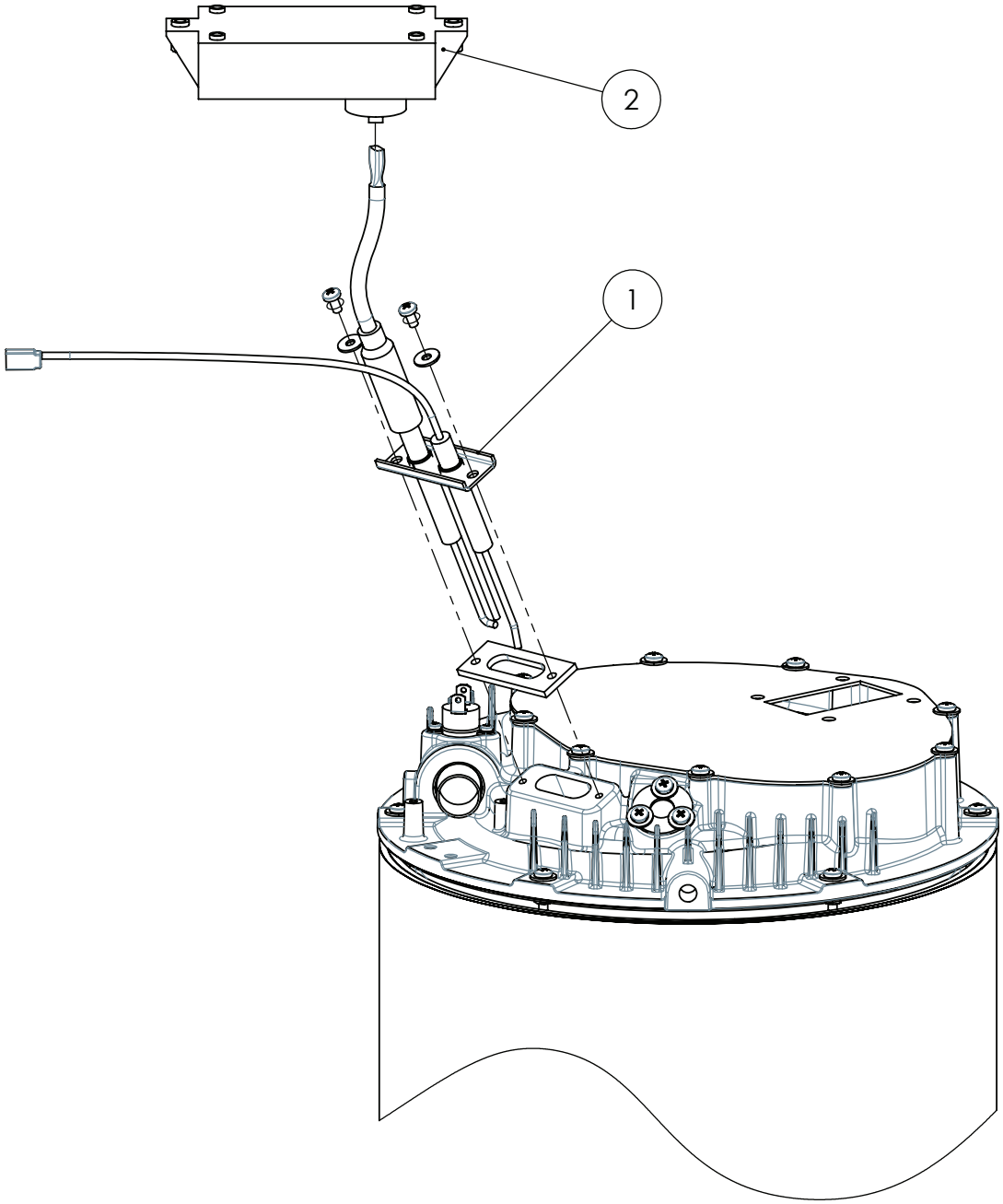
7.3 Water Lines and Fittings



ITEM NO.	PART NUMBER	DESCRIPTION
1	IGT-SPR0036	SMALL TEE
2	IGT-SPR0018	WATER INLET FITTING (3/4" NPT)
3	IGT-SPR0024	HEAT EXCHANGER INLET TOP TUBE
4	IGT-SPR0023	BY PASS TUBE
5	IGT-SPR0003	FLOW SENSOR KIT
6	IGT-SPR0025	HEAT EXCHANGER INLET BOTTOM TUBE
7	IGT-SPR0026	HEAT EXTANGER OUTLET TOP TUBE BUFFER
8	IGT-SPR0028	TANK TO DRAIN PORT TUBE
9	IGT-SPR0027	HEAT EXCHANGER OUTLET BOTTOM TUBE
10	IGT-SPR0029	DRAIN PORT
11	IGT-SPR0031	TEE BY-PASS LINE 2
12	IGT-SPR0032	PUMP TEE TO WATER OUT TUBE ASSEMBLY
13	IGT-SPR0033	PLATE HEAT EXCHANGER OUT TUBE
14	IGT-SPR0034	TEE BY-PASS LINE 1
15	IGT-SPR0037	OUTLET PORT 3/4 NPT
16	IGT-SPR0039	2 PORT SOLENOID VALVE
17	IGT-SPR0040	PLATE HEAT EXCHANGER
18	IGT-SPR0041	ADAPTER 1/2 X 20 FEMALE
19	IGT-SPR0007	PUMP KIT
20	IGT-SPR0030	BUFFER TANK OUT TO WATER PUMP IN TUBE
21	IGT-SPR0062	CLIP-ON SENSOR*

*Note: 1. Temperature outlet sensor is to be located just above SMC (#16) on outlet line (#12) above bypass line.
2. Recirculation sensor is centrally located on the heat exchanger inlet bottom tube (#6).

7.4 Ignition Components



ITEM NO.	PART NUMBER	DESCRIPTION
1	IGT-SPR0006	ELECTRODE KIT
2	IGT-SPR0005	IGNITER MODULE

8. Multiple Units

8.1 Modes of Operation

The Modes of Operation screens provide set up screens and additional information on the water heater. There are five Mode of Operation screens which are used by the technician during installation or maintenance of the water heater.

8.1.1 Daisy Chain Mode

1. Press and release the Mode button until the desired screen shows on the display.
   dC - Daisy Chain
2. Follow the instructions in the specific section to enter the desired settings.

8.1.2 Common Exhaust Mode

1. Press and hold the Mode button for five seconds until the rS screen appears. Now press and release the Mode button multiple times until the desired screen shows on the display.
   CE - Common Exhaust
2. Follow the instructions in the specific section to enter the desired settings.

8.2 Viewing and Setting Modes of Operation

8.2.1 Daisy Chain

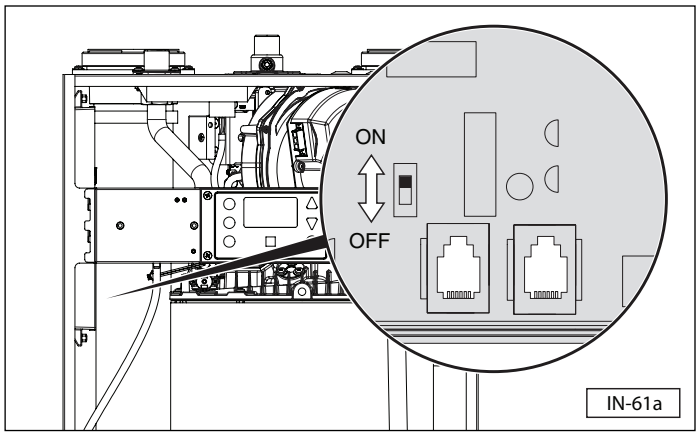
Set DIP Switches

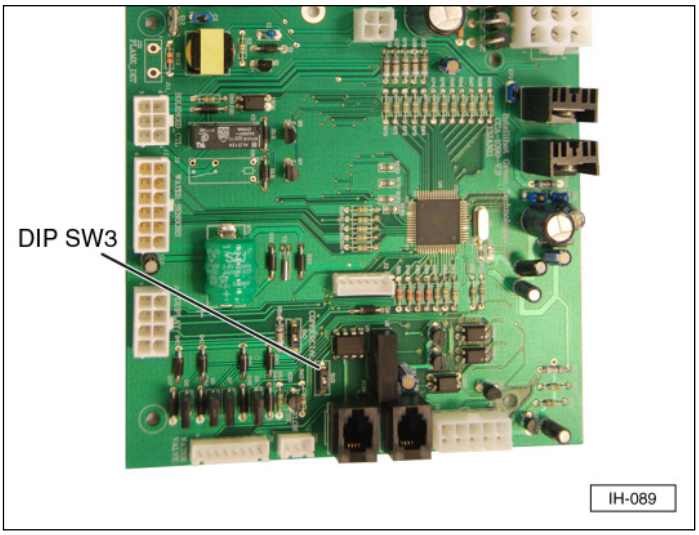
1. Disconnect the power from all the units in the system.

⚠ WARNING

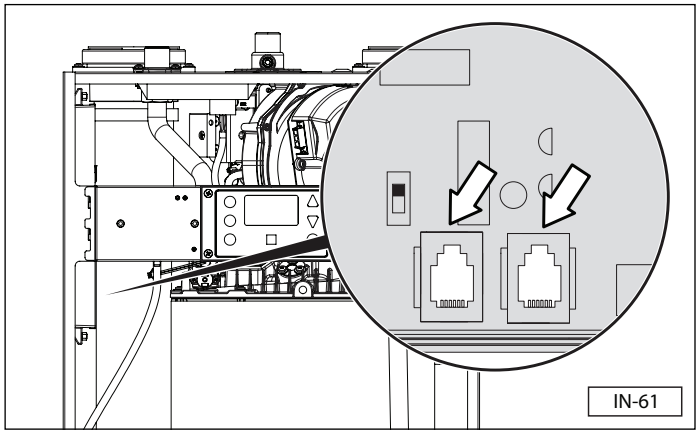
SHOCK HAZARD
Before making any adjustments or connections inside the water heater cabinet, make sure the power is disconnected. Unplug the water and/or turn the circuit breaker OFF.

2. Remove the front covers and locate the main circuit boards on the first and last units.
3. Locate DIP Switch 3 on the first and last units and position the switch in the ON position. On all the middle units, position the switch in the OFF position.

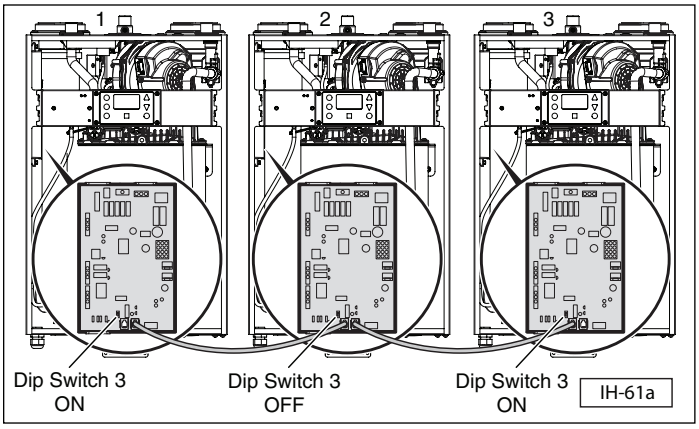




4. Using the supplied cables, connect one end of a cable into either of two jack receptacles (arrows) located on the circuit board and the other end to the jack in the next unit.



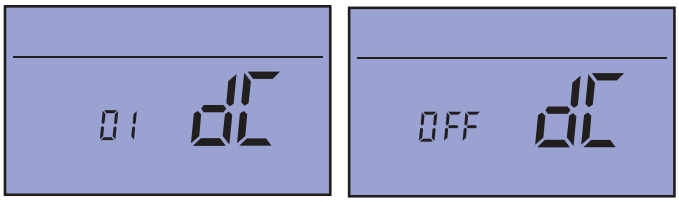
5. Pass the cable through the grommet located at the bottom of the cabinet.
6. Secure the cable using a zip tie.



7. Replace the front covers.

Set Up Unit Number

1. Reconnect the power and wait for the home screen to appear.
2. Press and release the Mode button until the dC screen appears. The designated number for the unit will be displayed. The default is OFF.



3. Now, press the Up/Down arrows to select the desired number for the particular water heater. Change the selection from OFF to one of the ten possible selections (01, 02, 03, though 05). The up/down arrows scroll from OFF to 1 through 05 and then to OFF.
4. Once the desired number is selected, press and hold the Enter button for three seconds to save this setting and return to the main display screen.
5. Repeat the above steps and set each unit to a different number. For example, the next unit would be 02, the third unit would be 03, and so on.

8.1.2 Common Exhaust Mode

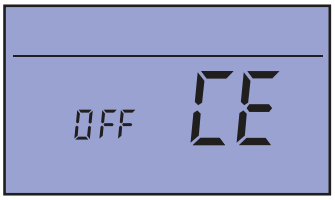
Changing this setting can only be done when the Flame ON icon is not displayed.

This mode is applicable when multiple units are connected together. Turning the CE mode ON allows multiple units to be vented into a common vent. Refer to the Venting for Commercial Application section for information on common venting guidelines.

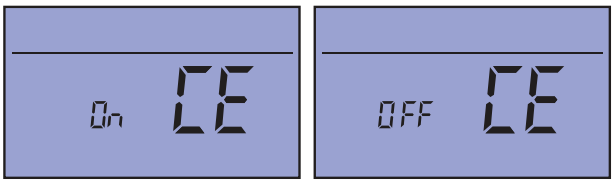
Press and hold the Mode button until the rS screen appears.

Press and release the Mode button multiple times until the CE screen appears. The current setting will be displayed.

The default setting for this mode in ON.



Press the Up/Down arrows to select either ON or OFF.



Press the Enter button to save the changes and return to the main display.

Note: If the Enter button is not pressed within 30 seconds of inactivity, the display will return to the home screen.

9. Warranty

General

This unit is warranted by Intellihot Green Technologies Inc. (Intellihot), and covers defects in materials and workmanship, subject to the applicable time periods and terms below. The warranty effective start date begins on the date of installation or on the date of possession in the case of new construction.

This warranty is extended to the original purchaser and any subsequent owner at the original install location, and applies only when properly installed by a licensed contractor and operated in accordance with the instruction manuals. This warranty is limited to repairs or replacement of parts, at Intellihot's option that are proven to be defective under normal use and connected only to potable water systems.

Warranty Period

Residential Warranty: Heat Exchanger - 12 years, Other Parts - 3 years, labor – 1 year

Commercial Warranty: Heat Exchanger - 6 years, Other Parts - 3 year, labor – 1 year

Residential Domestic Hot Water (DHW) means potable water heating in a single family residence. Commercial means all other applications.

Heat Exchanger Coil

The warranty period for a heat exchanger coil failure, when installed in a residential DHW application (including recirculation), is twelve (12) years from the effective start date. The warranty period for a heat exchanger coil, when installed in a commercial application (including recirculation), is six (6) years from the effective start date.

All other Parts and Components

The warranty period for any original parts (excluding the heat exchanger coil) against failure, is three (3) years from the effective start date. A replacement part will be warranted for the unexpired term of the original warranty. Defective parts submitted may not be returned. No returns will be accepted without prior authorization from Intellihot.

Labor

The applicable period of this limited labor warranty is one (1) year from the effective start date. The payment and amount of any payment are subject to approval at Intellihot's sole discretion. Replacement parts must be genuine Intellihot parts and warranty service must be performed by a licensed contractor. The Labor allowance will be paid based on the following:

Repair or replacement of any parts - $75/hour up to maximum of $150

Replacement of entire unit - $75/hour up to maximum of $225

Shipping Costs

If a replacement part is supplied under the terms of this warranty, Intellihot will provide ground service delivery for the part free of charge. Any expedited shipping expense will be paid by the customer.

Definition of Potable Water

Potable water is defined as drinkable water supplied from utility or well water in compliance with EPA secondary maximum contaminant levels (40 CFR part 143.3), as shown in the table. Intellihot will warrant the heat exchanger coil for hardness up to 15 Grains per gallon (257ppm as Calcium carbonate).

Contaminant	Level
Aluminum	0.05 to 0.2 mg/l
Chloride	250 mg/l
Color	15 color units
Copper	1.0 mg/l
Corrosivity	Non-corrosive
Fluoride	2.0 mg/l
Foaming Agents	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor	3 threshold odor number
pH	6.5-8.5 mg/l
Silver	0.1 mg/l
Sulfate	250 mg/l
Total dissolved solids (TDS)	500 mg/l
Zinc	5 mg/l

Not Covered by this Warranty

This warranty does not cover failures or problems due to:

- Failure to install in accordance applicable building codes, ordinances, normal plumbing and electrical trade practices.
- Improper installation, improper use, improper maintenance, improperly made replacements or repairs, accidents, or abuse.
- Sediment deposits, fire, flood, lightning, freezing, and acts of God, or any causes other than defects in materials and workmanship.

This warranty will be void and have no effect if:

- The unit is modified or altered in any way.
- Appliance(s) or equipment attached to the unit, that have not been approved by Intellihot Green Technologies.
- If the unit is used exclusively as a booster heater for a commercial dishwasher, or if the water from a reverse osmosis or deionized process is run directly through the unit.
- The serial number is altered, defaced, or discarded.

Warranty Limitations

This warranty applies only when the unit is used in the United States or Canada. Except for the limited warranties provided above, Intellihot Green Technologies disclaims any and all other warranties, including but not limited to warranties or merchantability and fitness for a particular purpose; provided however, that implied warranties or merchantability and fitness for a particular purpose are not disclaimed during the one year period from the effective date. Intellihot shall not be liable for indirect, special, incidental, consequential, or other similar damages, including lost profits, arising from or relating to the unit. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

How to Make a Claim

Please call (877) 835-1705. Proof of purchase in the form of a dated sales receipt and warranty registration is required in order to obtain warranty service, and should be included with your claim. The product owner should submit the warranty claim directly to Intellihot at the following address:

Intellihot Green Technologies, Inc.
Attn: Warranty Claims
2900 W. Main Street
Galesburg, IL 61401

All parts claimed to be defective may be requested to be returned to Intellihot for examination prior to full claim settlement. Please include the following information on your warranty claim:

- Model number and serial number of the unit.
- Date of original purchase.
- Owner's name and address.
- A description of the problem with the part and unit.

10. Product Warranty Card

To activate your warranty, please fill out the information in the form below and mail to the following address:

Warranty Registration
Intellihot Green Technologies, Inc.
2900 W. Main Street
Galesburg, IL 61401

Model: _____

Serial Numbers (up to 4):

_____

_____

_____

_____

Owner Information:

Name: _____

Address: _____

City, State, Postal Code _____

Phone Number_____

Dealer Information:

Sold By: _____

Address: _____

City, State, Postal Code _____

Phone Number_____

Make a copy or cut here to remove page.

Dealer / Installer Contact Information:

Revised 11-2015